Safety data sheet
Chlorine

1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

Product name
Chlorine
EC No (from EINECS): 231-959-5
CAS No: 7782-50-5
Index-Nr. 017-001-00-7
Chemical formula Cl2
REACH Registration number:
01-2119486560-35
Known uses
Not known.
Company identification
Linde AG, Linde Gas Division, Seitnerstraße 70, D-82049 Pullach
E-Mail Address Info@de.linde-gas.com
Emergency phone numbers (24h): 089-7446-0

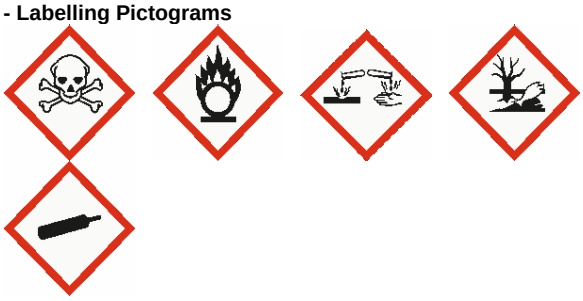
2 HAZARDS IDENTIFICATION

None.
Classification of the substance or mixture

Classification acc. to Regulation (EC) No 1272/2008/EC (CLP/GHS)
Press. Gas (Liq. gas) - Contains gas under pressure; may explode if heated.
Ox. Gas 1 - May cause or intensify fire; oxidiser.
Acute Tox. 2 - Fatal if inhaled.
Eye Irrit. 2 - Causes serious eye irritation.
STOT SE 3 - May cause respiratory irritation.
Skin Irrit. 2 - Causes skin irritation.
Aquatic Acute 1 - Very toxic to aquatic life.
- Corrosive to the respiratory tract.

Classification acc. to Directive 67/548/EEC & 1999/45/EC
T; R23 | Xi; R36/37/38 | N; R50
Toxic by inhalation.
Irritating to eyes, respiratory system and skin.
Very toxic to aquatic organisms.
Label Elements

- Labelling Pictograms



- Signal word

Danger

- Hazard Statements

H280	Contains gas under pressure; may explode if heated.
H270	May cause or intensify fire; oxidiser.
H330	Fatal if inhaled.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H315	Causes skin irritation.
H400	Very toxic to aquatic life.
EUH071	Corrosive to the respiratory tract.

- Precautionary Statements

Precautionary Statement Prevention

P280	Wear protective gloves/protective clothing/eye protection/face protection.
P244	Keep valves and fittings free from oil and grease.
P260	Do not breathe gas, vapours.
P220	Keep away from combustible materials.
P273	Avoid release to the environment.

Precautionary Statement Reaction

P304+P340+P315	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get immediate medical advise/attention.
P305+P351+P338+P315	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advise/attention.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P332 + P313	If skin irritation occurs: Get medical advice/attention.
P370 + P376	In case of fire: Stop leak if safe to do so.

Precautionary Statement Storage

P403	Store in a well-ventilated place.
P405	Store locked up.

Precautionary Statement Disposal

None.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Preparation: Substance.
Components/Impurities
Chlorine
CAS No: 7782-50-5
Index-Nr.: 017-001-00-7
EC No (from EINECS): 231-959-5
REACH Registration number:
01-2119486560-35
Contains no other components or impurities which will influence the classification of the product.

4 FIRST AID MEASURES

Inhalation
Toxic by inhalation. Possible symptoms are provoking the mucous membranes, dry coughs and respiratory difficulty. Prolonged exposure to small concentrations may result in pulmonary oedema. Delayed adverse effects possible. Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
Skin/eye contact
May cause chemical burns to skin and cornea (with temporary disturbance to vision) Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contaminated clothing. Drench

affected area with water for at least 15 minutes. Obtain medical assistance.

Ingestion

Ingestion is not considered a potential route of exposure.

5 FIRE FIGHTING MEASURES

Specific hazards

Non flammable. Supports combustion. Exposure to fire may cause containers to rupture/explode.

Hazardous combustion products

None.

Suitable extinguishing media

All known extinguishants can be used.

Specific methods

If possible, stop flow of product. Move container away or cool with water from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.

Special protective equipment for fire fighters

Use self-contained breathing apparatus and chemically protective clothing.

6 ACCIDENTAL RELEASE MEASURES

Personal precautions

Use self-contained breathing apparatus and chemically protective clothing. Evacuate area. Eliminate ignition sources. Ensure adequate air ventilation. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Monitor concentration of released product.

Environmental precautions

Try to stop release. Reduce vapour with fog or fine water spray.

Clean up methods

Hose down area with water. Wash contaminated equipment or sites of leaks with copious quantities of water. Ventilate area.

7 HANDLING AND STORAGE

Handling

Use no oil or grease. Suck back of water into the container must be prevented. Do not allow backfeed into the container. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Refer to supplier's handling instructions. The substance must be handled in accordance withgood industrial hygiene and safety procedures. Only experienced and properly instructed personsshould handle gases under pressure. Protect cylinders from physical damage; do not drag, roll, slide or drop. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents. When moving cylinders, even for short distances,use a cart (trolley, hand truck, etc.) designed to transport cylinders. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately tothe supplier. Replace valve outlet caps or plugs and containercaps where supplied as soon as container is disconnected from equipment. Keep container valve outlets clean and free fromcontaminates particularly oil and water. Never attempt to transfer gases from one cylinder/container to another. Installation of a cross purge assembly between the cylinder and the regulator is recommended. Never use direct flame or electrical heating devices to raise the pressure of a container. Purge system with dry inert gas (e.g. helium or nitrogen) before gas is introduced and when system is placed out of service. Ensure the complete gas system has been (or is regularily) checked for leaks before use.

Storage

Secure cylinders to prevent them falling. Segregate from flammable gases and other flammable materials in store. Keep container below 50°C in a well ventilated place. Observe all regulations and local requirements regarding storage of containers. Containers should not be stored in conditions likely to encourage corrosion. Containers should be stored in the vertical position and properly secured to prevent falling over. Stored containers should be periodically checkedfor general conditions and leakage. Container valve guards or caps should be in place. Store containers in location free from fire riskand away from sources of heat and ignition. Observe "Technische Regeln Druckgase (TRG) 280 Ziffer 5"

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit value

Value type	value	Note
TLV (ACGIH)	0,5 ppm	ACGIH 1995 - 1996
Germany - AGW	0,5 ppm	TRGS 900

Respiratory protection

Not required

Hand protection

Advice

Carry working gloves and protection shoes while handling gas cylinders.

Body protection

Protect eyes, face and skin from contact with product.

Personal protection

Ensure adequate ventilation. Protect eyes, face and skin from liquid splashes. Do not smoke while handling product. Keep self contained breathing apparatus readily available for emergency use. Keep suitable chemically resistant protective clothing readily available for emergency use. Carry working gloves and protection shoes while handling gas cylinders.

9 PHYSICAL AND CHEMICAL PROPERTIES

General information

Appearance/Colour: Greenish gas
Odour: Pungent

Important information on environment, health and safety

Molecular weight: 71 g/mol
Melting point: -101 °C
Boiling point: -34 °C
Critical temperature: 144 °C **Flash point:** Not applicable.
Autoignition temperature: Not applicable.
Flammability range: Not applicable.
Thermal decomposition: Not applicable.
Relative density, gas: 2,5
Relative density, liquid: 1,6
Vapour Pressure 20 °C: 6,8 bar
Solubility mg/l water: 8620 mg/l
pH value: If dissolved in water pH-value will be effected.

Other data

Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

10 STABILITY AND REACTIVITY

Stability and reactivity

May react violently with combustible materials. Reacts with water to form corrosive acids. May react violently with alkalis. With water causes rapid corrosion of some metals. May react violently with reducing agents. Violently oxidises organic material.

Hazardous decomposition products

Statements on decomposition

None.

11 TOXICOLOGICAL INFORMATION

Acute toxicity

Cause severe burns (eyes, respiratory system and skin). May cause inflammation of the respiratory system and skin. Delayed fatal pulmonary oedema possible.

LC50/1h (ppm) 293 ppm

12 ECOLOGICAL INFORMATION

General

May cause pH changes in aqueous ecological systems. Toxic to water organisms.

13 DISPOSAL CONSIDERATIONS

General

Avoid discharge to atmosphere. Do not discharge into any place where its accumulation could be dangerous. Contact supplier if guidance is required.

EWC Nr. 16 05 04*

14 TRANSPORT INFORMATION

ADR/RID

Class	2	Classification Code	2TOC

UN number and proper shipping name

UN 1017 Chlorine

UN 1017 Chlorine

Labels	2.3, 8, 5.1	Hazard number	265
Packing Instruction	P200		

IMDG

Class	2.3

UN number and proper shipping name

UN 1017 Chlorine

Labels	2.3, 8
Packing Instruction	P200
Marine pollutant	Marine pollutant
EmS	FC-SU

Other transport information

Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers ensure that they are firmly secured. Ensure that the cylinder valve is closed and not leaking. Ensure that the valve outlet cap nut or plug (where provided) is correctly fitted. Ensure that the valve protection device (where provided) is correctly fitted. Ensure adequate ventilation. Ensure compliance with applicable regulations.

15 REGULATORY INFORMATION

Further national regulations

Pressure Vessel Regulation
Gefahrstoffverordnung (GefStoffV)
Technische Regeln für Gefahrstoffe (TRGS)
Regulations for the prevention of industrial accidents

Water pollution class

according to §19 WGH Annex 1 : WGK 2 (water endangering)

16 OTHER INFORMATION

Ensure all national/local regulations are observed. Ensure operators understand the toxicity hazard. Users of breathing apparatus must be trained. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

Advice

Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted. Details given in this document are believed to be correct at the time of going to press.

Further information

Hommel: Handbook of dangerous goods
Kühn-Birett: Merkblätter gefährliche Arbeitsstoffe
Linde safety advice

End of document